

U.S. Patent Application Serial No. 09/935,750
Amendment dated December 1, 2003
Reply to OA of September 3, 2003

REMARKS

Claims 2-10 are pending in this application. Claim 1 has been canceled without prejudice or disclaimer. Claims 2-10 have been amended herein.

Amendment is also made to the specification.

Claim 2 has been amended to incorporate the limitations of canceled claim 1. Support for the other amendments to the claims and the specification is discussed below.

Claims 1-10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. (Office action paragraph no. 1)

The rejection is overcome by the amendments to the claims, as follows:

a) The Examiner states that in claims 1, 3, 5, 6 and 9, there is insufficient antecedent basis for “**the** photo dimerization reaction.” In the amendments, “the photo dimerization reaction” is amended to “a photo dimerization reaction”.

b) The Examiner states that in claims 2, 4, 7, 8 and 10, there is insufficient antecedent basis for the recitation “these 2 to 5 groups”. In the amendment, “these 2 to 5 groups are combined via a single bond, an ester bond, an ether bond or a urethane bond” is amended to “2 to 5 molecular groups selected from the group of alkylene groups having 1 to 30 carbon atoms and cycloalkylene groups having 3 to 12 carbon atoms, the 2 to 5 molecular groups joined via a single bond, ester bond, ether bond, or urethane bond--”. This amendment is supported by the “alkylene group having 3 to 12

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carbon atoms, a cycloalkylene group having 3 to 12 carbon atoms” on page 11, lines 3 to 7, of the specification.

c) The Examiner states that in claims 5, line 7, and claim 6, line 9, there is insufficient antecedent basis for “the structural unit”.

In claims 5 and 6, the term “structural unit” is replaced by “photo-alignment moiety causing a photo-alignment by photo dimerization”. That is, the term “structural unit” is replaced by –photo-alignment moiety–, with antecedent basis on line 3 of claim 5 or 6, and the amendment clarifies that the photo dimerization reaction of the photo-alignment moiety causes photo-alignment by photo dimerization. The amendments of “structural unit” to - photo-alignment moiety causing photo-alignment by photo dimerization - in claims 5 and 6 are based on the disclosure on page 3, lines 16 to 24, of the specification.

The specification is correspondingly amended on page 7, line 14, and page 8, line 1, to replace “structural unit” with --photo-alignment moiety causing photo-alignment by a photo dimerization--.

Applicants note that the phrase “structural unit” on page 4, line 23, page 9, line 6, and page 18, line 4, in the specification is not amended.

d) The Examiner states that there is insufficient antecedent basis in claim 6 for “the thermal polymerization reaction.” In the amendments, this phrase is amended to –a thermal polymerization reaction–.

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Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by WO 00/10974 (WO '974). (Office action paragraph no. 2)

The rejection of claim 1 is overcome by the cancellation of claim 1 without prejudice or disclaimer. The rejection of claim 2 is respectfully traversed. Claim 2 has been amended to incorporate the limitations of claim 1, with no change in the scope of claim 2.

The Examiner cites in particular page 35, line 17, to page 36, line 4, and page 37, line 21, to page 39, line 22, of the reference. Page 35, line 17, of the reference discloses Example XVII, which is 4,4' bis-maleimide benzophenone. This molecule has two maleimide groups and a structural portion which is a substituted benzophenone.

In order to meet the structural limitations of Example XVII of the reference, R₂ in claim 2 would be a benzophenone group, R₃ and R₄ would be hydrogen, and R₁ would have to be CH₂COO. However, CH₂COO is not an alkylene group, is not a cycloalkylene group, and is not a combination of 2 to 5 alkylene or cycloalkylene groups combined via a single bond, ester bond, ether bond or urethane bond. That is, Example XVII is inconsistent with the limitations on R₁ in claim 2. There is only one ester bond in Example XVII, and no alkylene or cycloalkylene group on the benzophenone side of this ester bond. Therefore, Example XVII of the reference is not consistent with the limitations of claim 2 and does not anticipate claim 2.

That is, in the compound disclosed in Example XVII of the reference, a benzophenone group and a maleimido group are bonded directly by an ester bond. However, in claim 2 of the present invention, a spacer which is an alkylene group or a cycloalkylene groups, is present between the ester bonding of a maleimido group and a benzophenone group. This spacer gives a degree of freedom to the benzophenone group of photo-alignment moiety after dimerization of maleimido group and

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produces the strong alignment of a liquid crystal.

Applicants also submit that this structural feature of the present invention is not suggested by WO '974 and, additionally, that advantageous effects can be obtained in the present invention because of the structural differences between the cited reference and the present invention, which are therefore unexpected over the reference.

Applicants therefore submit that claim 2 is not anticipated by, and further is non-obvious over, WO 00/10974.

Claims 3-10 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action. (Office action paragraph no. 4)

Applicants have rewritten claims 3-10 to overcome the rejection under 35 U.S.C. 112, second paragraph, as discussed above.

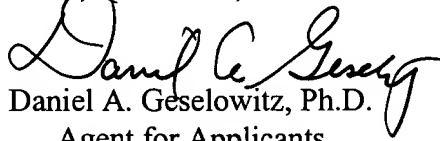
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If, for any reason, it is felt that this application is not now in condition for allowance, the Examiner is requested to contact Applicants undersigned agent at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

In the event that this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees which may be due with respect to this paper, to Deposit Account No. 01-2340.

Respectfully submitted,

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